Abstracts

A design of the low-pass filter using the novel microstrip defected ground structure

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A new defected ground structure (DGS) for the microstrip line is proposed in this paper. The proposed DGS unit structure can provide the bandgap characteristic in some frequency bands with only one or more unit lattices. The equivalent circuit for the proposed defected ground unit structure is derived by means of three-dimensional field analysis methods. The equivalent-circuit parameters are extracted by using a simple circuit analysis method. By employing the extracted parameters and circuit analysis theory, the bandgap effect for the provided defected ground unit structure can be explained. By using the derived and extracted equivalent circuit and parameters, the low-pass filters are designed and implemented. The experimental results show excellent agreement with theoretical results and the validity of the modeling method for the proposed defected ground unit structure.

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